

## ABSTRACT OF THE DISCLOSURE

A PWM system that minimizes output ripple of a multiphase DC-DC converter which converts N input voltages including at least one dissimilar input voltage. The PWM system includes PWM waveform logic that generates N PWM signals including a PWM signal for each of the N input voltages, and PWM control logic that optimizes relative phases of the N PWM signals based on voltage levels of the N input voltages. Various circuits and/or methods are contemplated for optimizing phase, including, for example, centering pulses for each PWM cycle, distributing pulses based on predetermined optimal phase angles, determining input voltage levels and selecting predetermined optimal phase angles, generating phase signals employing predetermined phase angles, measuring input voltages and calculating optimal phase angles, and using PLL logic or the like to measure and equalize off-times between PWM pulses.